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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/004,640	12/05/2001	Tsunehiko Yamazaki	3005-31	6794

7590 10/08/2003

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EXAMINER

PEREZ DAPLE, AARON C

ART UNIT	PAPER NUMBER
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2121

DATE MAILED: 10/08/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/004,640

Applicant(s)

YAMAZAKI, ET AL.

Examiner

Aaron C Perez-Daple

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 December 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.                      6) ☐ Other:

## DETAILED ACTION

### *Drawings*

1. Figure 7 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### *Specification*

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The Office suggests, -- Numerically controlled method for moving an object using a polynomial as time function --.
3. The disclosure is objected to because of the following informalities: the body of the specification refers to the claims where it should refer to embodiments of the invention. For example, line 26 of page 4 recites "the invention of claim 1" where it should recite -- the first embodiment of the invention --.

Appropriate correction of all such recitations is required.

### *Claim Objections*

4. **Claim 2** is objected to because of the following informalities:
  - I. Lines 5-6 recite, "obtained by first deriving said polynomial" where they should recite --obtained by taking the first derivate of said polynomial--.
  - II. Lines 7-8 recite, "obtained by second deriving said polynomial" where they should recite, -- obtained by taking the second derivative of said polynomial--.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. **Claim 3** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, lines 3-6, "at the time... function and commanding," are not understood by the Office. It appears that the applicant is claiming a sequence of events within a method. However, the relative times of when the position and velocity are computed, when the object moves, and when the commanding action is executed are not clear. For the purpose of applying prior art, the Office interprets that (1) the position and velocity are computed for a time in the future, (2) at the future time, a position and velocity are commanded at least partially based on the computed position and velocity, and (3) the object moves.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. **Claims 1-3** are rejected under 35 U.S.C. 102(b) as being anticipated by Pugh et al (US 5,808,893) (hereinafter Pugh).

9. As for claim 1, Pugh discloses a numerically controlled method of moving an object to be controlled along a predetermined locus, controlling control axes, said method comprising:

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making said locus approximate to a spatial polynomial [col. 3, lines 29-36, "Desired trajectories may...communications port."];

converting said polynomial into a polynomial as time function [col. 5, lines 21-28, "The Turret Slide...rotational velocity)."; col. 7, lines 26-34, "We have chosen...describes each segment."];

distributing said polynomial converted as time function to said each control axis [col. 11, lines 15-26, "The Controlled Actuator...commanded motion input."];

producing control command in said each control axis on the basis of said polynomial distributed to said each axis as time function [col. 2, lines 13-21, "The VersaCam is a...cam drive shaft."; col. 14, line 64 – col. 15, line 4, "Because the VersaCam...measured motor position."]; and

moving said object to be controlled along said locus, controlling each control axis on the basis of said control command [col. 14, line 64 – col. 15, line 4, "Because the VersaCam...measured motor position."].

10. As for claim 2, Pugh discloses the numerically controlled method as set forth in claim 1 wherein said control command is produced on the basis of a position command on the basis of said polynomial converted as time function, a velocity command obtained by first deriving said polynomial converted as time function, and an acceleration command obtained by second deriving said polynomial converted as time function [col. 7, lines 26-34, "We have chosen...describes each segment."; col. 5, lines 7-13, "The Cam Simulator...in camshaft velocity."].

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11. As for claim 3, Pugh discloses the numerically controlled method as set forth in claim 1 wherein said control command is executed by computing a position and velocity at the time in future when said object to be controlled has not yet moved on the basis of said polynomial as time function commanding [col. 5, lines 7-13, "The Cam Simulator...in camshaft velocity."].

### *Conclusion*

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6,401,006, note polynomial interpolation and differentiation; US 5,926,389, note possible 102 reference; US 5,659,480, note Fig. 3; US 6,298,279, note Fig. 1; US 5,508,596, note precomputation of control commands; US 5,229,698, note polynomial based interpolation method; US 5,614,800, note Fig. 4; US 5,708,586, note Fig. 1; US 5,028,855, note polynomial approximation of motion path; US 5,825,654, note Fig. 4; US 5,321,623, note time-based interpolation method; US 5,369,592, note Fig. 1; US 5,682,319, note Fig. 3.
13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron C Perez-Daple whose telephone number is (703)305-4897. The examiner can normally be reached on 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anil Khatri can be reached on (703)305-0282. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

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*[Signature]* 10/1/03

Aaron Perez-Daple

*Ramesh Patel* 10/6/03  
RAMESH PATEL  
PRIMARY EXAMINER  
*For Anil Khatri*